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POSSIBILITIES OF IMPROVING MARKETING THROUGH BETTER ORGANIZATION

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The problem of marketing organization may be approached from two points of view: one we may call, for want of a better term, *inter-unit* organization, the other *intra-unit* organization. The first has to do with the number and type of the marketing units between the producer and the consumer, the division of marketing functions between these different types of agencies and their relation to each other. Intra-unit organization, on the other hand, has to do with the internal organization of each of the several types of marketing organizations.

There are three aspects of intra-unit organization that should be distinguished. First, there is *economic organization*, which includes the combination of production factors, the proportion of the investment in site, buildings, equipment, supplies, and other production factors, the relation of the various expenses to each other or to total expense, the choice of the grades of the factors of production, and the size of the business unit. Second, *business organization* or *organization for operation*, which includes the division of responsibility, the assignment of tasks and functions, lines of authority and the like. And third, *financial organization*, the arrangements for financing, and the provisions for distribution of earnings. the lack of time and available information on business organization and financial organization prevents any discussion

*Read before the Annual meeting of the American Farm Economic Association at Chicago, December 28, 1922.

of them, although they might logically be included in an analysis of individual marketing units. The discussion is therefore limited to the economic and inter-unit organization aspects.

Needless to say, scientific interest in the internal organization of marketing units is of such recent origin that little headway has been made in accumulating a body of information that can be used. Such data as are available, however, show a great diversity of conditions under which middlemen operate and a consequent wide range in their volume of business and costs. A study of the organization and management of 88 creameries being made by the Division of Agricultural Economics of the University of Minnesota in cooperation with the United States Bureau of Agricultural Economics shows, for example, a variation in output of 44,000 to 880,000 pounds of butter and a variation in cost from 8 cents per pound of output for the smallest to 1.5 cents per pound for the largest creamery (See Figure I.).* Similarly 47 of the 50 retail grocery stores of Fargo reported by the North Dakota Agricultural College have average monthly sales ranging from \$654 to \$8,905 with margins varying from 9.0 to 36.4 per cent of gross sales.†

An examination of Figure I brings out the fact that there is a wide variation in costs per unit of output. Moreover, there appears to be a rather definite relation between each of these costs and the volume of business; as the output increases, the cost per unit of output declines, indicating that the larger creameries realize the economies of large-scale production when increasing the size of their business. Of the four costs, machinery and equipment, space, labor and management, and supplies and miscellaneous cash outlays, that of machinery and equipment shows the smallest absolute change with variations in output; machines and equipment can be installed in such small units, for the most part, that the economies of fuller utilization of the equipment already installed are relatively small.

The labor and management costs are the most elastic. This is especially true of the creameries with less than 200,000

*Black, J. D. and Guthrie, E. S. Organization and Management Problems of Minnesota Creameries.

†Johnson, Alma K. Fargo and Its Grocery Stores, Special Bulletin No. 18, North Dakota Agricultural Experiment station. April, 1920.

pounds of butter output which are obliged to employ a high-priced buttermaker and manager who can furnish most of the labor and all of the management no matter whether the output is 100,000 or 200,000 pounds. To increase the output within these limits does not require the employment of a proportionately larger amount of high-priced labor; cheaper help can rather be employed to furnish the additional labor. As the output increases above 300,000 pounds, the labor and management

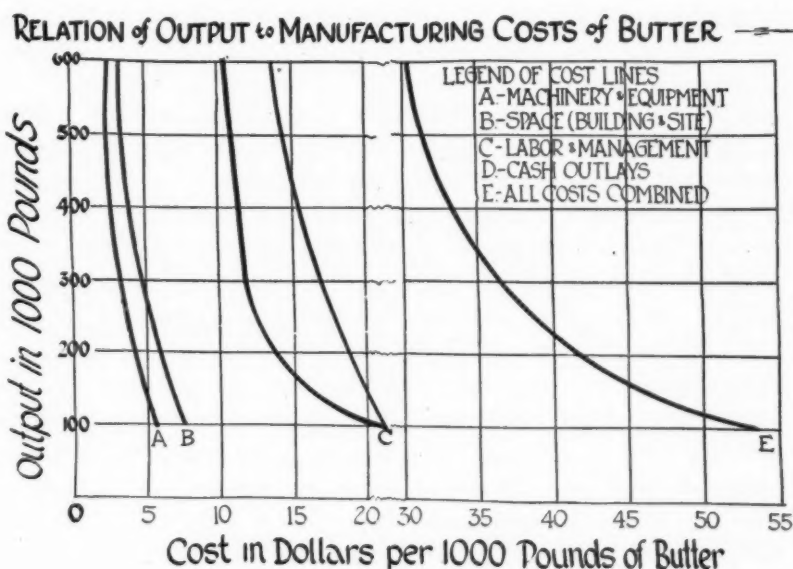


FIG. I.

costs decrease less rapidly. This is because higher rates are paid for management as the managerial responsibilities increase with the growth of the business. The larger creameries, it is true, use a larger proportion of unskilled labor; but this only partly offsets the increased management cost. Similarly building costs do not vary at the same rate with variations in the volume of business.

The next step in the analysis is to explain the factors affecting each of these costs. Every cost is the product of two factors, the number of units of the element used and the cost per unit. Since these two factors do not necessarily vary at the same rate for changes in butter output, it is important

to know the relation of each to the volume of business. In the case of the creameries, for example, the labor per unit of output varies between different sized creameries much more than the rates per hour.

These various relations of cost to the size of the business are valuable tests that may be applied to a given marketing enterprise. (It should be pointed out that this is the point where most cost studies stop.) However, if the analysis of costs is made complete, all of the conditions affecting costs should be taken into consideration and, if possible, measured. Seasonal fluctuation in the output of creameries, for example, is a cause for differences in the utilization of plant and equipment. The creameries receiving over 11 per cent more of their annual butter-fat supply during their heaviest month than during their lightest month, after full allowance is made for differences in output, use on the average 5.5 more square feet per thousand pounds of butter than the creameries receiving less than 8 per cent more of their milk supply in their heaviest than in their lightest month. Seasonality also has the important effect of making the average price received for butter higher for those creameries that utilize their plant more nearly at full capacity the entire year, since they market a larger proportion of their product during the fall and winter months when the price of butter is highest. Probably a better illustration is that of churns. Twenty-eight creameries using only one churn of 1,000 pounds capacity report outputs of butter ranging from 59,000 to 245,000 pounds. Obviously, there are some mal-adjustments of equipment.

If the results of such an analysis are to be applied to a given sized unit to determine the best amounts of the different elements to use, it is desirable to know not only the average cost but also the varying amounts of the elements used by other marketing units having the same output. Undoubtedly there will be a wide distribution of space, labor, equipment, and other elements, representing many mal-adjustments both in amounts of the elements and their grades of efficiency. Thus, office space for 400,000 pound creameries varies from 30 to 300 square feet. In fact, it is possible that there will be no perfectly organized firms; probably all of them will be

found to be using too much of one element and too little of another to give the most economical sized unit.

Data for more strictly marketing organizations show that the problem of analysis is similar to the foregoing. Data collected by the North Dakota Agricultural Experiment Station for 47 of the 50 retail grocery stores of Fargo show that the total expense varies from 22.2 per cent of gross sales for stores having less than \$1,500 of monthly sales to 10.5 per cent for those having over \$6,000 of sales (See Table I.). Labor and maintenance expenses per unit of sales decrease with the size of the business. Labor cost, which is the largest single item of expense, varies from 15.1 per cent of gross sales for stores selling less than \$1,500, to 5.6 per cent for stores of the largest sized group. Space expenses vary somewhat irregularly with the volume of business. Delivery and miscellaneous expenses per unit of sales have an inverse relation to each other when compared on the basis of the size of the business. The stores of the group \$3,000 to \$4,500 have the highest delivery costs and the lowest miscellaneous expense per unit of sales. Like most cost studies, this study gives no information as to the causes for these variations in costs.

*Table I.—Relation of sales to costs of operating 47 Fargo grocery stores in per cent of sales**

Monthly sales	Total costs	Labor	Space	Mainte- nance	De- livery	Miscel- laneous
Under \$1,500-----	22.2	15.1	2.7	1.2	2.2	1.0
\$1,500-3,000 -----	16.6	10.1	2.1	.7	2.8	.9
\$3,000-4,500 -----	14.3	7.9	1.8	.5	3.5	.6
\$4,500-6,000 -----	13.4	7.0	2.0	.5	2.8	1.1
Over \$6,000-----	10.5	5.6	1.8	.3	1.4	1.4

Both the creamery and retail store data show generally decreasing costs with larger output. Professor Macklin's study of the Madison retail grocery stores indicates a similar relation.† Apparently, the optimum sized unit has not been reached. It should be pointed out, however, that transportation, an important factor in determining the size of a business,

*These data are derived from information given in North Dakota Experiment Station Special Bulletin No. 18, April, 1920.

†Macklin, T. What the Retailer Does with the Consumer's Dollar. Wisconsin Agricultural Experiment Station Bulletin 324. January, 1921.

has thus far been omitted from the analysis. In the case of creameries, the transportation costs are usually borne by the patrons. It is therefore only by using available information about density of butterfat production in a given locality, the frequency of deliveries, the amount of butterfat per delivery, the mode of transportation and the time consumed, and by applying this information to a given community that its importance to the creamery can be ascertained.

A typical community in Minnesota is therefore selected having an assumed butterfat production of 2,000 pounds per square mile. With this density, the radius of the area from which a creamery of varying capacity must obtain its butterfat varies from 3.5 miles for 100,000 pounds to 8.8 miles for 600,000 pounds of output. Multiplying the average length of haul by the cost of transportation per mile and adding to this result the cost of labor and time consumed gives the average total cost per haul. This cost divided by the butter equivalent of the butterfat of a single delivery, gives the unit cost of hauling. A 50-pound can of cream was assumed as the hauling load in this case. However, farmers go to town to deliver cream and for other purposes at the same time; hence, only part of the expense can properly be charged to hauling cream. This introduces a serious difficulty into the problem. Let us arbitrarily assume in this case that half of the trips to town with cream are for the sake of the cream.

Figure II gives the transportation costs under these assumed conditions for creamery outputs of different sizes. When these costs are combined with the cost of manufacture, a new cost relation to output is obtained in which the optimum-sized creamery is 300,000 pounds, instead of 600,000 pounds, the most economical size when transportation is not included as a cost factor. If the amount of cream assumed for each delivery were 100 pounds instead of 50 pounds, the transportation costs would be reduced by one-half, and the 500,000-pound instead of 300,000-pound-creamery would be the least-cost combination.

This brings out the important point that marketing units, whether proprietary or cooperative, are supplementary to the farm or factory, and that their size and organization are dependent in part upon the conditions under which the

organizations which they serve operate. A 600,000-pound creamery may be able to manufacture butter cheaper than its 200,000-pound competitor, but the time and equipment of the dairyman may be too valuable to travel an additional four miles to take advantage of the better price, and so the small creamery persists. Similarly, the grain farmer may find it worth while to patronize the smaller grain elevator which operates on a larger margin in preference to the larger elevator which is located farther away. The small community grocery store, less efficient in terms of cost per unit of sales than its big downtown competitor, likewise persists because consumers demand quick service.

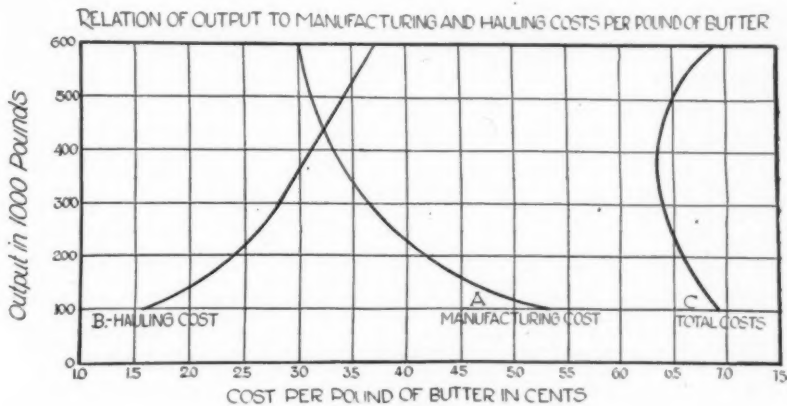


FIG. II.

Since a recital of these relations would merely impress one with the importance of analyzing all the factors in the economic environment, attention can now be directed from the method to its application.

The improvement in marketing efficiency that may be expected to follow the setting up of such efficiency standards depends partly upon the attitude of business managers, and partly upon the mobility of organization. Before applying them, managers will in many cases need some cost data for their own business. Some of these costs, such as transportation, for example, can be obtained only at great difficulty. This, however, does not make cost standards useless. The manager of a country elevator by knowing that

he is employing too much labor may effect a partial reorganization of his business even though he has no statistical measure of his efficiency in selling grain. In short, all of the relations in the complex of a business enterprise need not necessarily be measured before any reorganization is made.

A rather large class of middlemen, however, can be expected to readjust their businesses only when forced to do so by competition. And the reorganization of business concerns on a large scale must of course come about slowly. A wholesale produce concern can not afford to abandon its plant and equipment merely because the plant is too large or the equipment unnecessarily expensive. It may be more economical to continue to realize something on the investment during the lifetime of the plant rather than to abandon it for a new, although better, establishment. New concerns, or those with obsolete elements, are of course more fortunately situated; but these comprise only a small proportion of middlemen at any given time. They are nevertheless sufficiently numerous to account partly for the gradual reorganization of the retail and wholesale establishments to larger units that takes place as a city grows or as the market expands. This has undoubtedly made possible the increases in the size of the creameries, livestock shipping associations, and potato shipping associations that have occurred in the Northwest during the past decade.

The slow, often imperceptible, progress that marketing organization makes through internal reorganization is probably chiefly responsible for the lack of interest taken in this aspect of the distributive mechanism. It is small satisfaction to producers or consumers to know that at some future time some economies may be realized if the laws of supply and demand are permitted to grind themselves out. What they demand is action. The commission merchants in a livestock market may know that one-half of them could market the livestock handled by the existing number at the present time and do it on a smaller margin with a profit to themselves. Yet which of the dealers will go out of business? The margin taken from the value of the livestock is the same for each. The difference in selling efficiency may be so small that each receives a volume of business

sufficiently large to permit him to remain in business on the uniform margins charged. Each wishes that some of the others would get out of the market, but is unwilling to make the change himself. And so they all continue until some unusual circumstance forces a readjustment of the number of middlemen to the market receipts. Having such considerations in mind and witnessing a large number of middlemen at the different steps in the marketing process, each taking a bit of the consumer's dollar as it goes back to the producer, the producer's and consumer's attention is attracted by plans for changing the external rather than the internal relations of marketing units.

The cost accounting method of marketing analysis, however, may be a valuable guide in reorganizing the inter-unit marketing relations. Dr. Taylor in his paper on *The Objective of Cost Accounting in Agriculture* has pointed out the value of comparing the costs of different types of marketing agencies performing similar services to determine the relative advantages of the different types.* But may we not go even farther and use this method to compare the efficiency with which specific services are rendered at different steps in the marketing process by undertaking a series of parallel cost studies at the principal marketing stages between producer and consumer; such studies, for example, as would indicate the relative cost of storing potatoes on the farm, at the local market, and at the terminal warehouse, or such as would show the comparative costs of cleaning grain at the farm, at the local elevator, at the terminal elevator, and at the mill? There are doubtless many maladjustments in the division of marketing functions between the different types of marketing units and between the units at the different stages in the marketing process. In the absence of any cost studies that would throw light on the problem, it is impossible to ascertain the extent of the maladjustments. In some instances they are probably greatly impairing marketing efficiency; in other cases they are probably not responsible for materially higher costs. Under any circumstances, studies that make possible a comparison of the costs of ren-

*Taylor, H. C. *The Objective of Cost Accounting in Agriculture*. *Journal of Farm Economics*, April, 1923.

dering marketing services lay the foundation for a rational reorganization of the inter-unit marketing relations.

Needless to say, the principal changes in inter-unit marketing organization are now being effected through the federation and integration of farmers' cooperative marketing associations. Unfortunately, few data that can be used to compare the efficiency of these organizations with other types of middlemen are available. A comparison of commissions charged is about as far as one can go at the present time. Such a comparison seems to indicate that there are some small economies in large-scale cooperative marketing. The Farmers' Union livestock commission associations by handling a large volume of livestock at the Missouri Valley markets have operating costs from one-half to two-thirds the regular charges. The Central Cooperative Livestock Commission Association, a federation of 380 livestock shipping associations in the South St. Paul market area, by handling 20 per cent of the livestock marketed in South St. Paul during its first year's business operated at a cost of \$9.29 per carload of livestock, or at approximately two-thirds the regular commission charge. This was made possible on a volume of livestock valued at over \$17,000,000. The net earnings of \$86,000, when reduced to a carload basis, were \$6.60, only five cents per hundredweight for a carload of livestock weighing 15,000 pounds.

These savings are probably representative of the savings that are realized or that may be realized by the cooperative commission and wholesale marketing of staple farm products at the central markets.

Their effect upon the individual livestock producer is obviously insignificant when compared with the efficiency of the service rendered. The savings of the cooperative livestock commission companies are lost if a sacrifice of even five or ten cents per hundredweight in the price is made to the volume of business. Whether the savings are real, or only apparent as maintained by competitors, probably depends largely upon the efficiency of management. In any case, they can never be large because of the narrow margin upon which the product is marketed at the terminal market.

The limited opportunities for reducing the terminal selling charges of agricultural products has therefore resulted

in emphasizing the rendering of marketing services. This tendency is probably most strikingly illustrated by the California Fruit Growers' Exchange and the Minnesota Cooperative Creameries Association, this latter a federation of 400 of the 645 Minnesota cooperative creameries, which have thus far omitted the selling function entirely. And even such organizations as the Prune Growers' Association, the Burley Tobacco Growers' Association, or the American Cranberry Exchange, which sell their members' products, direct their efforts more to the distribution of their products than to increasing the volume of selling.

The services that can be rendered more efficiently by such organizations than by local cooperative associations or by other middlemen, vary with different commodities and with the conditions under which the products are marketed. The larger volume of business may give the central marketing association an advantage over its competitors in sorting and grading or in utilizing surplus and by-products. The federation of Minnesota cooperative creameries by shipping butter in carloads saves about one-half of one cent per pound over less than carload shipments. Large-scale marketing appears to have realized some important economies in financing on the Pacific Coast and in the South, although there are apparently no such important savings of this sort among the associations in the North Central States. The economies of large-scale storing are probably unimportant.

The important service which these associations may render is rather the better adjustment of supply or demand, or both, to the market. For most agricultural products, the control of supply is more important than the control of demand; since most farm products handled by producers' associations are not suited to advertising and sales campaigns. Professor Macklin in his recent book indicates that only 26.1 per cent of agricultural products are consumption goods when they leave the farm.* The remainder are goods that must be used in further production before they are ready for consumption, and so probably can not be economically advertised by the farmers' marketing association. To what extent demand can be created for the 26.1 per

*Macklin, T. *Efficient Marketing for Agriculture*, p. 268.

cent that are consumers' goods remains to be seen. Some notable success has been achieved in advertising fruits, although experience is too short and too limited to indicate how soon the point of saturation in the market may be reached. Something can probably be accomplished in advertising some of the other products making up the 26.1 per cent, although obviously not all of them are adapted to national or large-scale selling campaigns because of the nature of consumers' demand.

Experience seems to show that much more can be done through federated activity in adjusting supply to the market. This may take the form of maintaining a comprehensive system of news collection and directing the products to the markets that need them most. It may consist of holding products, such as cheese and wool, for which there is not a continuous market, until they can be marketed to better advantage. Or it may consist of directing the seasonal flow of products to market in an attempt to stabilize the price over a period of time. Obviously, the opportunities for improvement vary with different commodities and with different markets. Much more may be expected of associations marketing fruits, vegetables, and other products marketed through decentralized markets than for those marketing the great staple products, such as wheat and cotton, whose marketing mechanism is much more sensitive to changes in supply and demand conditions.

Something may also be accomplished in the control of quality. Probably in no other respect are the local cooperatives falling so far short of their possibilities, and it should be noted that private buyers are making little headway. Closely associated with this problem of quality is the better and quicker adjustment of production to demand which may be realized through federated activity by bringing the producer into more direct relationship with the consumer or with a later stage in the marketing process. Experience in cooperative marketing is educational. It familiarizes the producer with the problems of marketing and teaches him the demands of the market for kinds and qualities of product. To be sure, there may be no immediate readjustment of production; it may require time to impress the value of establishing a reputation for a product upon

the producer; in other instances, it may require the time and expense of a reorganization of production. A federation can surely assist in this reorganization. The confidence which cooperators have in their own enterprise makes them more willing to accept advice as to the proper breeds and varieties to produce than when dealing with privately operated agencies.

As an example of this, one of the chief aims of federated dairy organizations is to improve and to standardize the quality of dairy products by educating managers of cheese and butter factories in the best methods of production and preparation for market. Probably slower progress, however, must be expected in the standardization of products whose conditions of production can not be easily controlled.

Commercial agriculture makes production a community problem. This does not mean that it is no longer a matter of concern to the individual producer. It means rather that he has a new problem that is common with other farmers producing for the same market. What affects the machinery that markets the product of one producer affects the prosperity of all. If reputation for marketing a product of a given kind and quality is desirable, it must therefore be obtained through common action. This must come through central direction. Private middlemen do not furnish the directing force that is necessary to accomplish the result in all cases. Possibly the very nature of competition is an obstacle to it. This appears to be the case if we may judge from the common practice of middlemen at local markets of paying or tending to pay a flat price irrespective of quality, a practice which encourages the production of inferior and less desirable products.

A discussion of marketing reorganization would not be complete without some reference to the scarcity of high-grade management as a limiting factor on more efficient intra-unit and inter-unit marketing. Among the individual marketing units the larger organizations appear to be more efficient than the smaller. But it is conceivable that some small establishments are already too large for the available management and that larger returns per unit of factors

other than management would warrant a reduction in the size of the unit.

In the field of integrated and federated marketing the question of delegation of management is of great importance. As the business grows, management becomes differentiated and must be delegated. This is a more important factor for cooperative marketing associations than for others, either because the farmer or consumer owners are not favorably situated for maintaining close control, or because they do not have sufficient knowledge to exercise the function themselves. The result is that the advantages credited to cooperative marketing associations where efficient management is assumed do not always materialize in practice.

In conclusion, it should be pointed out that progress in the better coordination of the activities and functions of our marketing agencies is also being worked out through private and public agencies. As a result of the economic reorganization of individual units, a new type of middleman appears here, another disappears there; a new function is assumed by one, and abandoned by another. Trade associations affect a better coordination of their members, although it is not always in the public interest. Nor in all cases do they prevent needless waste. The produce exchanges in our livestock markets do not prevent the useless feeding of livestock that are about to be driven to the slaughter. The wasteful duplication in the distribution of milk that is estimated to double the cost of a unified system continues. Some one replies that cooperation is the solution. But cooperation has only added another middleman in both the milk and the livestock markets. To give the producers a monopoly of the market is no solution of the problem for the consumer who views the producer in the same light as the independent distributor. In such cases the evidence points to the need of some outside, impartial agency to supplement individual and associated activity if the wasteful duplications and misdirected activities of the present marketing organization are to be eliminated.

DISCUSSION BY R. M. GREEN,

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The very able paper just presented called attention to two points that are of particular importance to the intelligent direction of marketing investigations and to attempts at improvement in farm marketing.

First, in the discussion of the internal organization of a single business unit, a creamery, attention was called to the difference in size of the most efficient unit, when manufacturing costs alone are considered, and when, in addition, transportation costs are involved. This instance emphasizes in a single direction the very great importance of economic background to any very sharply delineated cost-picture of what efficiency is. It is just this thing that often makes the modifying circumstances disclosed by the general questions in an economic schedule of almost equal importance with the statistical data bearing directly on the point at hand.

Second, in the discussion of what was termed inter-unit marketing organization, the purposes of cooperative organizations in the marketing field were said to be: first, to reduce marketing costs; second, to secure better marketing service; third, to establish superior marketing contacts. This discussion will be confined to a brief consideration of the utility of these three purposes from the standpoint of improving farm marketing. The likely effect on the producer of possible savings was very well brought out in the paper just read.

Cooperative efforts among farmers in the marketing of their products have demonstrated the possibility of some improvement through savings by the use of better organization methods. A saving of ten cents a bushel on the 110 million bushels of Kansas wheat that goes to market represents the large sum of eleven million dollars. Were this saving to be divided among ten or twenty companies, there would be a strong inducement for each to effect the saving. When this sum is divided among the 75,000 wheat growers in Kansas the inducement to each one to exert very much effort is weakened unless the saving of every penny is neces-

sary for the farmers' very existence. Without going further into this phase of the question, it is safe to say that in Kansas those farmers who are in a bad condition financially are so bad off that possible savings from improved marketing methods will be but one small contribution to an improvement in their condition. The majority of Kansas farmers do not seem to be in such financial condition. Profits are therefore likely to be a keener incentive than savings. This is in no way a belittlement of farmers' efforts at cooperative marketing. It only emphasizes the likelihood of greater possibilities in the second and third purposes enumerated above, namely, in better service in the markets and in the establishment of closer contact with buyers and sellers.

Radical changes in methods may be far from beneficial if it is not known how the product to be marketed or the market to which the product goes has influenced and shaped the method used. I have in mind an instance of a mill located in a certain midwest county. This mill consumes a quantity of wheat equal to a large portion of that produced in the county. In this instance as in many others, where a complaint of method seems justifiable, practically all of the wheat in the vicinity of this mill is shipped out of the county and wheat ground by the mill is shipped in from other parts of the state. This is apparently a great waste in marketing. However, the president of this company explains that they have tried grinding the wheat bought in the home county, and laboratory and baking tests have shown it to be of inferior quality. Aside from the matter of private business, there would be a greater economic loss if this mill should have persisted in using a home product and destroyed its own market so that it would finally have had to quit grinding wheat. In this case, what is apparent, is the effect of a cause more deep seated.

Changes in marketing methods such as some cooperative organizations have been able to bring about by combination and federation, have effected a saving. Larger volume of business has cut down overhead expenses and enabled operation on a smaller margin of cost. This matter was admirably presented in the paper just read.

In the case of the grain elevator the matter of distance of haul is a factor that works against large volume of busi-

ness. Even in this assembling business, looking at the matter from the standpoint of the elevators, they are merchandising service. Certain large cooperative elevators in Kansas last year were handling wheat at a cost of two to three cents a bushel under that of some of the smaller cooperative elevators. This was because they were handling something like 285 thousand bushels of grain each, in 16-thousand-bushel elevators. Whereas, the smaller companies were handling around 123 thousand bushels in the same size elevator. However, if a farmer is very far from market and an elevator company sees fit to extend him better service by building an elevator closer to him, the difference of a few miles in haul is enough to shift his trade. In most sections of Kansas the customary charge for hauling wheat beyond a certain minimum distance is one cent a bushel per mile. This chance for elevators to sell service to farmers tends to multiply the number of elevators and decrease their volume of business. It is a condition analogous to that of the small suburban neighborhood store that exists because of the particular service its location enables it to offer.

While it is well to keep in mind the importance of improving methods of marketing by instituting savings through improved organization it should not be forgotten that other prerequisites to such improved methods are, better knowledge of the product to be marketed, and a better knowledge of the markets to which the product is to go. Especially is this true with staple farm products where the marketing of the raw product is more of a trading operation than a processing or manufacturing operation. For instance, in the local elevator business, while costs are of some concern, the main requirements are to get business, and get the best price possible for the grain sold. That is, give as pleasing service as possible and know the market to sell on as nearly as you can know it. The plant organization is so simple and free from departmentalization that salesmanship is of more importance than industrial engineering. Each particular product, and each producing and market center has its own peculiar problems. Substantial improvement usually grows out of a little more or less of this or that. There is no prescription good once and for all.

In studying ways and means of improving the machinery for marketing farm products, the emphasis has frequently been laid upon cooperating or not cooperating. So much has this been the case that conservative administrators in agricultural colleges have sometimes hesitated to build up a market department, whose chief work would, as they conceived it, be that of promoting cooperative companies.

It appeals to the speaker, that it is at just this point that marketing departments of colleges can be of smallest service. The essence of the cooperative relationship is that of harmonious personal and community relationships. The imperfections of human nature more than imperfection of the markets are its vital problems. That is nearer the field of the sociologist, than to that of marketing. It is something that will have to be left largely to the initiative of the peoples directly concerned.

On the other hand, the speaker believes that much more emphasis can well be put upon a study of products themselves for those characteristics that make them more readily marketable, and upon careful analysis of the markets to which these products go. Certainly where the objective is to get wheat to a market, the admonition to get understanding applies no less with respect to the wheat and the market than with respect to the particular machinery of transfer. The possibilities in a service organization that analyzes particular markets and market conditions are large. Ability to get better prices sometimes justifies higher selling costs than the average. The positive or price side of the farm market is as rich in possibilities for service and for investigation as the negative or cost side. The establishment of superior marketing contacts in any such manner will insure better marketing service.

A GROWER'S MARKETING MACHINE *

BY R. E. HANLEY

SALES DIRECTOR, WESTERN DIVISION, THE FEDERATED FRUIT & VEGETABLE GROWERS, INC.

I am required to tell you something of organization within admittedly the largest of all industries in this country and yet the last of all of the biggest to organize—Agriculture. The farmer seems to have awakened at last to the need of placing his industry on an organized business basis, for he is already in big business, probably without thoroughly knowing it.

A great movement along these lines is now sweeping the country, receiving the official sanction of the President of the United States, the Secretary of Agriculture, the Secretary of Commerce, United States Bureau of Agricultural Economics, the American Farm Bureau Federation and many other important factors, national and otherwise. The American Farm Bureau Federation at its last annual meeting by unanimous vote agreed to establish a department of cooperative organization which will educate and assist the farmers in forming their local commodity marketing associations.

The stamp of approval on cooperative organization of agriculture has been given by the War Finance Corporation, Eugene Meyer having expressed himself emphatically on the subject many times. Many of the big banks in the country including those in New York, are officially supporting this movement.

That branch of Agriculture with which this subject deals constitutes the perishable food industry, the production, distribution, and sale of fruits and vegetables.

Before more extended remarks respecting cooperative effort among this class of producers, it seems fitting at a meeting of the American Farm Economic Association to relate some pertinent facts bearing on the character and extent of the operations that enter into the breach between production and consumption of these food products. The discrepancy between consumers' costs and producers' returns is not a new topic of discussion but rather one that has had considerable promi-

*Read before the meeting of the American Farm Economic Association at Chicago, December 28, 1922.

nence, particularly since the outbreak of the World War and during a national clamor against the high cost of living. It has had exhaustive investigation by a Congressional Committee at Washington a short time back and while the Committee's report made interesting reading we hear little of the corrective results accomplished.

Too little is probably known by the general public of the factors necessary to conduct the production, packing, distribution and sale of food stuffs of a perishable nature and doubtless many misunderstandings and unfair charges of one kind or another have been the result.

The successful commercial production of fruits and vegetables with few exceptions is dependent upon careful grading, sorting and packing, generally and best performed in central packing houses operated cooperatively by growers associations or independently by private interests. These packing houses furnish at the growers' expense, the required containers, barrels, boxes baskets or crates, labels and wrappers for the packing and shipping of the various products. The cost of these materials in addition to the charge for packing service varies and many times is high in relation to the net value of the commodity packed, yet quite necessary to provide safe carriage and to meet the exacting demands of the retailer and consumer.

The desirability of cooperative effort on the part of producers and the operation of these community or association packing houses has been proven in many fruit and vegetable producing districts but probably greatest success has been achieved in this regard by the citrus fruit growers in California where organization has effected considerable economy in packing operations.

Except for small truck gardens and orchards adjacent to consuming centers, few crops of fruits or vegetables commercially grown are independent of rail transportation—express of freight—and among producers pretty generally it is contended the costs of this service are out of proportion to the market value of the products. In numerous instances heavy transportation expense has the effect of restricting marketing areas for crops and in period of low markets some sections have been obliged to abandon whole fields on account of apparently excessive costs of carriage. Despite this fact and

due to energetic distribution, few branches of the fruit and vegetable industry have been deterred by heavy transportation expense from constantly expanding their marketing operations in the development of new markets often far distant from the origin of the products. To organization and scientific distribution is this attributable and as evidencing some of the progress in this direction, it can be shown that whereas but a few years back 90% of the grape crop of Michigan (moved forward in several thousand cars) was distributed among but six of our cities, yet the crop of 1922 reached out to two hundred and thirteen markets among thirty-five states.

It is worth while to note that at times this necessary broadening of distribution seeking consumptive outlets actually invades territory producing competitively similar products and we refer to the shipment of California celery and lettuce to New York State and New England points at times when York State celery and lettuce are available at least twenty-five hundred miles nearer the consuming centers. California and Michigan grapes are to be found each season on their way to New York City and other Atlantic seaboard markets, passing en route New York State and Pennsylvania grapes destined Chicago and western territory even to north Pacific coast points. There is always some irony in the revelation that New York State, one of the foremost apple producing districts in this country, consumes more Oregon and Washington apples than any other state in the Union.

Now you may ask, what about the transportation service complained of as entering disproportionately into the cost of marketing perishable farm products? The railroad company official explains that the transportation of these products requires specially constructed refrigerator or frost proof insulated cars that cost more than ordinary equipment. The traffic also requires lighter than ordinary loads per car as not to impair the perishable commodity for lack of sufficient ventilation or refrigeration. There is necessary, too, ice plants and re-icing stations—expedited movement adapted to protective service (heat or cold) in season—special tracing, diversion and reconsignments. He lays much stress also on the liability for deficiencies in transportation and points out that shippers' claims form no small part of the basis for rate making.

Then again another facility of importance to the industry is storage—dry warehouses and refrigerated plants. The necessity of supplying out of season demands of the consumer and inability to market suitably at harvest period portions of important crops such as cabbage, onions, potatoes and apples, make economically necessary the use of storage facilities, the expense covering which adds itself to the numerous items that constitute the spread between producer and consumer.

Now what about distribution and selling, those functions so necessary to the producer? The old practice of individual consignments to selected commission merchants has been pretty generally supplanted by modern methods although not as much progress has been made in southern producing districts as elsewhere. Sales to visiting cash buyers are much desired by the fruit and vegetable growers except where these buyers are concerned more with speculation than the actual trade requirements of their principals and except when these buyers seek to purchase below fair market values which often happens when the grower relies upon his own advices relative to market conditions without support or aid of some local organization. Except in isolated cases, few fruit or vegetable producing districts attract sufficient bona fide buyers to purchase more than small portions of the entire output of those districts and as a result facilities are needed that will seek out and provide market demands for the available products. Obviously greatest advance to that end is accomplished by organized effort among the producers and economies in selling, reduction in competition, more equitable distribution and greater net returns are the reward for close and loyal cooperation. The actual methods of distribution and sale by these cooperative associations of growers in various parts of the country have been and still are much varied. Few there have been among growers associations able to conduct their own marketing and consequently service contracts have been made in the past with brokerage or distributing agencies who on commission or brokerage terms engage to sell in the carload lot to wholesale dealers. Unquestionably greatest success in marketing is achieved by those growers associations who can maintain their own sales departments and who are able to establish their personal sales forces in the consuming markets. Thus they maintain control of their product, regulate distribution, and

effect economies of operation if the volume is had. However, few organizations of the growers have sufficient tonnage extended over any considerable period of the year that would warrant maintaining sales forces in more than a very few markets if any and successful sales operations from the standpoint of net results require in the present day the largest possible distribution, depending of course upon the extent of competition met with from other producing districts.

It was to meet the need of organized producers of short seasoned commodities that the establishment of trained sales forces in all of the important marketing centers was undertaken by the North American Fruit Exchange, a national sales service organization created in 1911. The Exchange made available for and subject to the direction of individual shipping associations during their short harvesting and marketing period, the exchange's own sales corps maintained in the markets.

It is this North American Fruit Exchange which effective January of this year has been merged into and has become the foundation of the Federated Fruit and Vegetable Growers, Inc., a strictly cooperative growers' national marketing organization which meets in an economical and practical way the needs of the large number of associations of growers throughout the country producing fruits and vegetables in their season. The facilities of the Federated enabled its members at actual cost of the service to conduct distribution of their products and effect sale to wholesalers, chain store companies and dealers capable of purchasing in carload lots.

This organization not only furnishes a sales corps distributed among the markets but supplies to those associations requiring them, sales managers at the shipping headquarters who conduct the sales operations under counsel of the growers. At the close of shipping periods these sales managers and their assistants are transferred to other active shipping districts thus involving each association in expense only during their actual shipping operations.

While obviously some intermediate factors are eliminated through operation of this marketing machine, yet great possibilities are before it with respect to still closer contact with the consumer. However, greater development of the chain store idea or cooperative organization among consumers them-

selves becomes importantly necessary to that end. At any rate, advanced progress along cooperative marketing lines by the producers bespeaks for the benefit of the consumer greater stabilizing of markets with consequent lowering of levels of values without loss to the producer, through the avoidance of those fluctuations that affect consumers generally only adversely.

A STATISTICAL ANALYSIS OF FARM MANAGEMENT DATA

BY C. C. TAYLOR

IOWA AGRICULTURAL COLLEGE

The rapid development of the science of agricultural economics has directed a large part of the efforts of the departments of economics and farm management in our agricultural experiment stations and of the United States Bureau of Agricultural Economics toward the measurement of farmer's profits and the analysis of the factors influencing those profits. Farm accounts obtained in chronological detail or through the survey method have achieved a relatively high degree of accuracy in the measurement of the farmer's net income from the use of his labor supply, his land, and his capital assets. But the problem of measuring the influences which make for greater or less profits has remained a difficult problem due to the multiplicity of influences.

Reasonably successful results are obtained by sorting and sub-sorting according to the principal causal factors, relying on the canceling out of subordinate causal factors, and constructing a cross tabulation to bring out the average differences attributable to these causal factors. The difficulty arises that high correlations often exist between these principal causal factors and the subordinate causal factors so that the latter do not cancel out. It then becomes problematical which are the true causes of the observed differences and to what extent, if any, the supposed causes contributed to the differences noted. A further difficulty arises from the inability to sub-sort many times with a limited number of reports. The writer of this paper attempts to classify these factors influencing any farmer's profits and to suggest a method of measuring the importance of each influence, of the many influences combined, and to measure each net effect.

The factors influencing profits group themselves into four main divisions: (1) size of business, (2) proportionment of the business elements, (3) efficiency as to physical productivity, and (4) bargaining efficiency. The first factor differs from the second due to the ability of a farmer to increase

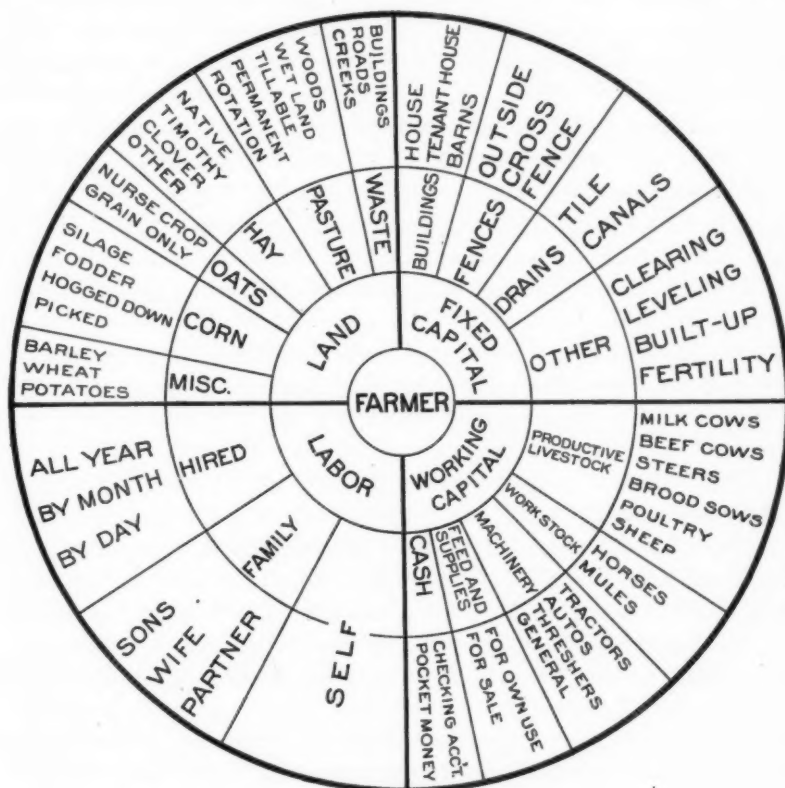
the size of his business in all directions without disturbing the balance between the various kinds of elements constituting his business organization. The second factor supposes a fixed total size but a possible increase in size of one element at the expense of the size of some other element. Dr. John R. Commons contrasts these two ideas by the terms "expansion" and "economy," meaning, by the latter term, proportioning. Dr. H. C. Taylor distinguishes the first factor as "capacity" and the second as "proportionment." The third factor, physical efficiency, means high yields per acre, high gains per hog or steer, high production per cow, high delivery of work per man, and other such measures of engineering efficiency. The fourth factor, bargaining efficiency, means selling at the highest obtainable price and purchasing or hiring or renting at the lowest price possible. It is of particular importance to the individual entrepreneur.

Consideration of the first mentioned alternative of the farmer, that of increasing the size of business, shows it to be infinitely complex in itself. The farmer has these four general directions in which he can increase the size of his business. He may operate more land, he may employ more labor, he may use more working capital, or he may use more fixed capital. Each one of these alternatives has in itself many divisions and subdivisions. The accompanying diagram illustrates, graphically, the many directions in which a corn belt farmer may increase the size of his business.

Assuming, however, that the total area of the circle remains the same in order to represent constant total size, it is apparent that the hog enterprise may be expanded by displacing part or all of the steer enterprise or that the corn enterprise may be expanded by encroaching on the oats enterprise or that the tractors might be increased with a corresponding decrease in work stock. These are questions of proportionment rather than of total size.

Assuming further that both the area of the circle indicating size of business and the size of each segment indicating proportionment remains the same, an expansion may be imagined at right angles to the plane of the circle, giving it volume, to represent increased efficiency. This expansion may apply either to part of the segments or to all segments without detracting from the usefulness of the previous con-

cept of expansion which was represented graphically as radial expansion. But, just as there are two directions in which expansion at right angles to the plane of the circle may take place, there are two directions in which efficiency may increase. The first is by greater physical output per



unit (engineering efficiency) and the second is by greater price per unit of physical output or by smaller cost per unit of input (bargaining efficiency).

The usual measurements of size of farm business are acres operated, months of labor, value of working capital, and value of fixed capital or, at least, the value of buildings which are the most tangible and measurable elements of fixed capital. These measurements of size are only approximately accurate because they do not provide for variations

in normal productivity of those factors. It assumes that one acre of land or one month of labor or one dollar's worth of capital represents as much size as does any other one unit. In reality they represent equal area, equal time, or equal selling value but we know that land as a factor of production is more than merely extension or area and that labor differs in strength and in wisdom and that capital varies in net productivity per unit of investment value. But these constituent elements of size blend so indistinguishably into elements of efficiency that the usual measurements of size are here considered satisfactory for our purposes.

In turn, the subdivisions of these size factors—land, labor, and capital—can be measured in acres of various crops, in months of various kinds of labor, in numbers of head or units of livestock and in dollars of value of capital not of sufficiently homogeneous nature to permit them to be measured in numbers.

The units for measuring proportionment are the same as for measuring size.

The units for measuring efficiency are not standardized. Frequently units are used which combine the effects of physical efficiency and of bargaining efficiency. Net receipts per animal unit and crop receipts per acre are examples. Their magnitudes are due partly to engineering efficiency and partly to bargaining efficiency. The use of such measurements should be confined to those instances where it is desirable to combine the influence of physical output and price. Pounds of gain on livestock, pounds of milk per cow, yield per acre, crop index, and productive days work per man are good measurements of physical or engineering efficiency except that they do not reflect differences in quality of livestock finished for market or of grades of grain to be sold.

Prices received and prices paid for purchasing goods, hiring labor or renting land are, in themselves, measurements of bargaining efficiency except that they reflect, in part, differences in normal productivity of the elements of cost or differences in quality of goods sold.

Our two principal errors in the past have been, first, in seeking at the outset the influences of the many elements represented at the perimeter of our circle rather than the

major factors near the center and, second, in mixing indiscriminately the problems of size and proportionment with those of physical efficiency and of bargaining efficiency. The present suggestion is to attack the problem according to its systematic classification as outlined above.

Although the foregoing applies to the cross tabulation as well as to the correlation method of analysis, the latter is to be preferred, as has been pointed out by H. R. Tolley and others, on account of the greater possibility for eliminating concomitant causes, particularly with the small number of records available from a detailed cost route and to a less extent with the larger number of records available from a farm management survey.

According to the partial or multiple correlation method of analysis the influence of size is measured by correlating each of the four factors—acres operated, total months of labor, value of working capital, and value of buildings—with labor earnings, as an index of profit, and each with

every other. The coefficient of correlation is* $r = \frac{\Sigma xy}{n \cdot \sigma_x \sigma_y}$

where Σxy is the algebraic sum of the products of the individual departures from the x and y averages, where x and y represent two variables such as acres operated and labor earnings, where n is the number of farms, and where σ_x and σ_y are the standard deviations of these two variables. If labor earnings tend to increase as the acres operated increase a coefficient falling somewhere between 0 and + 1 will be found. If labor earnings tend to decrease, a coefficient falling somewhere between 0 and - 1 will be found. The magnitude of the coefficient indicates the importance of the influence.†

*G. U. Yule: "Introduction to the Theory of Statistics." H. R. Tolley: "The Theory of Correlation as applied to Farm Survey Data on Fattening Baby Beef." U. S. D. A. bulletin 504.

†In practice the records may be grouped and the formula

$$r_{12} = \frac{\Sigma f \xi \eta_{12} - n d_1 d_2}{n \cdot \sigma_1 \sigma_2}$$

used as a short cut method, where 1 and 2 are variables such as x and y , where $\Sigma f \xi \eta_{12}$ is the same as xy except calculated in groups from an assumed mean, and where d represents the correction between the assumed and the true mean. In practice both the numerator and the denominator of this fraction are left in class intervals rather than multiplied out into their corresponding expressions in units.

Having found those simple correlation coefficients, the net influence of any one variable with one other variable remaining constant is found by the formula

$$r_{12.3} = \frac{r_{12} - (r_{13} \cdot r_{23})}{\sqrt{1 - r_{13}^2} \cdot \sqrt{1 - r_{23}^2}}$$

and the net influence of one variable with several other variables remaining constant is found by the corresponding formula

$$r_{12.3456} = \frac{r_{12.345} - (r_{16.345} \cdot r_{26.345})}{\sqrt{1 - r_{16.345}^2} \cdot \sqrt{1 - r_{26.345}^2}}$$

These influences are expressed as coefficients, the magnitude of which represent the importance of the influences. The average effect of any influence on labor earnings, expressed in dollars, is shown by the regression coefficient "b" by the formula

$$b_{12.3456} = r_{12.3456} \frac{\sigma_{1.23456}}{\sigma_{2.13456}} \quad \text{where} \quad \sigma_{1.23456} = \sigma_1 \sqrt{1 - r_{12}^2}$$

$$\sqrt{1 - r_{13.2}^2} \sqrt{1 - r_{14.23}^2} \sqrt{1 - r_{15.234}^2} \sqrt{1 - r_{16.2345}^2}$$

The combined influence of variables 2, 3, 4, 5 and 6 on 1 are expressed by the coefficient of total correlation R where

$$R_{1(23456)} = \frac{(\sigma_1^2 - \sigma_{1.23456}^2)^{\frac{1}{2}}}{\sigma_1}$$

The probable error of r is $\pm \frac{.6745(1 - r^2)}{\sqrt{n}}$. If 225 rec-

ords are used the probable error can not be less than 0 in case of perfect correlation nor more than $\pm .045$ in case of no correlation whatever. With that many records a coefficient as low as .2 or .25 becomes of significance. With only 25 records the probable error could be as high as $\pm .135$ so that a much higher coefficient of correlation is required in order to indicate a significant relationship. Ordinarily a coefficient of correlation five or six times its probable error is desired in order to be considered of significance.

This method of analyzing the influences affecting labor earnings has been employed by the Iowa State Experiment

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Station to determine the causes for high and low labor earnings on 237 Tama County farms for the year 1921. Attacking first the major factors of size, the coefficients of gross correlation were found to be as follows:

Coefficients of gross correlation:

between (1) labor earnings and

(2) acres operated-----	— .452
(3) months of labor-----	— .495
(4) value of working capital —	.424
(5) value of buildings-----	— .256

between (2) acres operated and

(3) months of labor-----	+ .657
(4) value of working capital +	.684
(5) value of buildings-----	+ .410

between (3) months of labor and

(4) value of working capital +	.545
(5) value of buildings-----	+ .435

between (4) value of working capital and

(5) value of buildings-----	+ .606
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From the above we conclude first that, in a year such as 1921 when farming was unprofitable, the larger size of business was unprofitable and, second, that it is usual to increase size of business in all directions at once. More land required more labor, more working capital and, to a lesser degree, more buildings. Somewhat smaller correlations existed between labor used and working capital or buildings than with land. A high correlation between working capital and buildings occurred.*

The net correlation between labor earnings and each of the other variables with all others held constant were as follows:

Coefficients of net correlation:

between (1) labor earnings and

(2) acres operated-----	— .094
(3) months of labor-----	— .278
(4) value of working capital —	.143
(5) value of buildings-----	+ .053

*Farm houses were omitted from buildings since they had no influence on the farm business record.

From the above it appears that the large gross coefficients were due to concomitant causation, that increasing size in the direction of labor was, in 1921, the most disastrous and that increasing fixed capital in the form of buildings was really a profitable choice. This last observation, however, is of no value to the farm owner since further study has shown that the real estate charge made in arriving at labor earnings was not proportionally higher on the better improved farms. What was the tenant's gain was the landlord's loss. Thus the farm owner, who is his own landlord, loses what he gains and its significance is limited to the tenant who gets better buildings without a proportionately higher real estate cost.

The total correlation, "R," between labor earnings and these size factors was .543 which indicates the relative importance of size as an influence affecting labor earnings aside from the factors of proportionment and efficiency except that those other factors are probably associated to a greater or less extent with size.

Moving out toward the perimeter of our circle diagram we analyze the relation of various types of land use to labor earnings. These coefficients are found:

between (1) labor earnings and

(6) acres of corn-----	— .254
eliminating acres operated	+ .215
(7) acres of oats-----	— .327
eliminating acres operated	— .048
(8) per cent of farm in pasture	— .163
eliminating acres operated	— .016

Analyzing the relationships between various types of livestock and labor earnings the following coefficients were found:

between (1) labor earnings and

(9) brood sows-----	— .036
eliminating acres operated	+ .146
(10) mature cows-----	— .247
eliminating acres operated	— .051
(11) feeder steers-----	— .126
eliminating acres operated	+ .067

(12) dairy products sold----- + .114
eliminating acres operated + .088

Analyzing the influence of using family labor instead of hired labor gave this coefficient:

between (1) labor earnings and

(13) value of family labor----- —.414
eliminating acres operated —.298

These coefficients were practically the same as those between total months of labor and labor earnings.

As a measure of productive efficiency the following coefficient was determined:

between (1) labor earnings and

(14) pounds of dead hogs-----	— .242
eliminating acres operated	— .204

As measures of bargaining efficiency the following coefficients were determined:

between (1) labor earnings and

(15) hog receipts per cwt.----- + .272

(16) rent per acre_____ — .197

acres operated_____ — .272

Reviewing the above coefficients it is apparent that the principal influences on labor earnings were the number of acres operated, months of labor employed, sows kept per farm, dead hogs, and rent per acre. The net influence of each of these factors on labor earnings, eliminating the other four, was found to be as follows:

between (1) labor earnings and

(2) number of acres operated__ —.282

$$b = \$ - 5.36$$

(3) No. of months of labor_____ — .328

b = \$ — 63.09

(9) No. of brood sows_____ + .300

$$b = \$ + 43.86$$

(10) cwt. of dead hogs.....	— .311
b = \$ — 12.57	
(16) rent per acre.....	— .354
b = \$ — 175.22	

This coefficient of total correlation, "R," is found to be + .656 which, considering the multiplicity of influences previously discussed but not calculated here, may be considered a reasonably high coefficient.

From the above we conclude that increasing size of business in the direction of land, as a whole, at costs and prices prevailing in 1921, decreased labor earnings about \$5 with each acre; that increasing size in the direction of labor decreased labor earnings about \$63 for each month; that expanding the hog enterprise increased labor earnings nearly \$44 for each added sow; that every 100 pounds of dead hogs decreased labor earnings about \$12.50, a sum which is greater than the value of the hogs due to inferior hogs remaining, the necessity of selling cheap corn, and the loss of the profitable use of other resources; and, lastly, that increasing rent \$1 per acre on farms averaging 205 acres decreased labor earnings \$175 per farm, indicating that only a small part of the higher rents were in consequence of more productive farms but were, on the other hand, due chiefly to less advantageous bargaining.

Other influences such as corn acreage, crop index and hog sale prices suggest profitable avenues of research but the foregoing will suffice for the purposes of this paper as a presentation of method.

FARM LABOR SUPPLY AND BUSINESS

BY GEORGE C. HAAS

BUREAU OF AGRICULTURAL ECONOMICS, U. S. DEPARTMENT OF AGRICULTURE

The Division of Crop and Live Stock Estimates of the Bureau of Agricultural Economics secures relatives of the supply and demand of farm labor on April of each year by averaging the estimates of 40,000 farmer reporters. The estimates are replies to the following queries:

1. Supply of hired labor at current rate of wages.
 - a. Present supply compared with normal supply.
Per cent----- (Normal equals 100).
2. Demand for hired farm labor at current rate of wages.
 - a. Present need compared with normal need.
Per cent----- (Normal equals 100).

The purpose of this discussion is to throw some light on the reliability or accuracy of these estimates and to show the relationship between farm labor conditions and the business cycle. There are no other estimates of the supply and demand of farm labor with which we can compare the estimates of the Bureau. However, it is a well known fact that a short supply of farm labor results from the absorption of the labor by other industries. The absorption of an increased amount of labor by other industries means high business activity. Thus when business activity is high the farm labor supply is short and vice versa.

Table I.—Farm labor supply expressed as a percentage of demand. Reported April 1.

Geographic Divisions	1918 Per Cent	1919 Per Cent	1920 Per Cent	1921 Per Cent	1922 Per Cent	1923 Per Cent
North Atlantic-----	63.5	81.9	57.8	99.4	104.6	77.0
South Atlantic-----	70.4	78.8	67.5	108.9	110.1	88.1
North Central— (East of Mississippi River) -----	75.2	85.6	64.2	104.5	111.4	80.2
North Central— (West of Mississippi River) -----	74.2	84.8	75.2	118.4	113.2	93.3
South Central -----	71.9	82.1	69.9	113.6	112.1	93.3
Western States-----	77.0	87.9	80.9	114.9	119.0	97.1
UNITED STATES---	71.9	82.9	68.8	108.8	111.4	88.4

If the estimates of farm labor supply and demand represent true conditions, they should therefore fluctuate synchronously with the indices of business activity or the business cycle. The relatives of farm labor supply and demand conditions may be expressed in one figure by dividing the supply relative by the demand relative and for reasons stated this percentage will be low when business conditions are high and vice versa. When the percentages are inverted the relationship is direct.

FIG. 1.—FARM LABOR SUPPLY PERCENTAGE OF DEMAND COMPARED WITH PRICE INDICES*

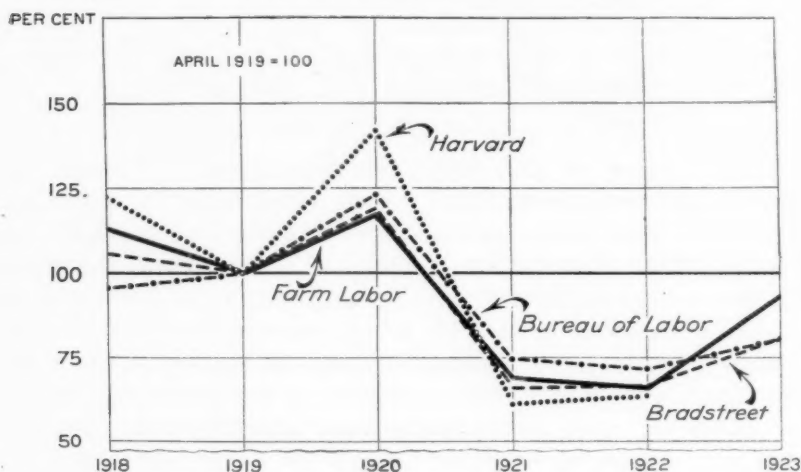
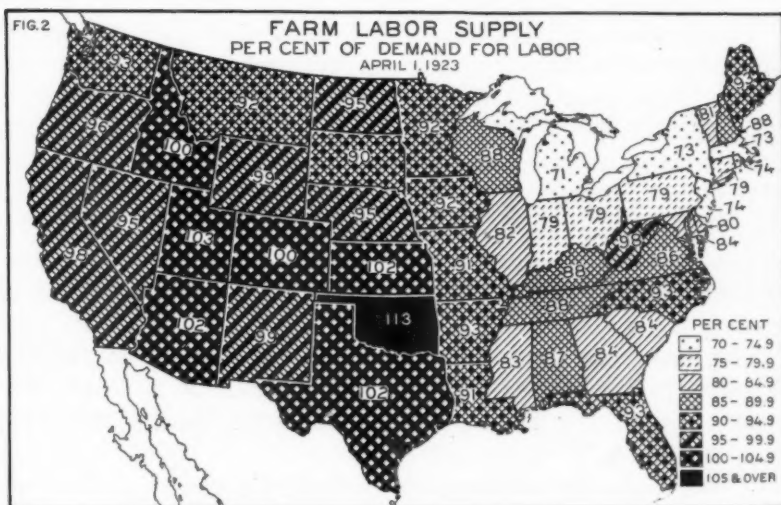


Figure 1 shows three series indicative of business activity plotted with the inverted farm labor supply and demand percentages. The farm labor figures show a remarkable correspondence with the business cycle indices and confirm in a very substantial way a theoretical analysis of the relationship of farm labor supply and demand with the business cycle. Since the estimates bear out consistently what would be expected of true figures, they are no doubt fairly accurate indices of the supply and demand of farm labor.

The farm labor indices may even be adapted as rough indices of business, especially for areas where indices of local

*The three price indices labeled as Harvard, Bureau of Labor and Bradstreet are the Price Index of Business Cycles of the Harvard Economic Service and the wholesale price indices of the Bureau of Labor Statistics and Bradstreet, respectively.

business conditions have not been developed. Table I shows the percentages not inverted by geographical divisions for the years 1918 to 1923. Figure 2 shows the percentages not inverted by states.



These percentages are perhaps not as satisfactory as those for the larger areas, given in table, because the averages are based on fewer cases, but nevertheless the map shows the relationship between states to be about what one would expect to find. Michigan, the seat of the automobile industry, has the low percentage or the highest business activity.

NOTES ON THE AGRICULTURAL SITUATION

BY A. B. GENUNG

BUREAU OF AGRICULTURAL ECONOMICS, U. S. DEPARTMENT OF AGRICULTURE

The general outlook, July 1, is one of moderate promise as to production and very moderate promise as to prices.

The South is in a relatively strong position from producers' standpoint. The problem will apparently be one of making a respectable cotton crop rather than of selling it. In point of relative improvement since the distressing times of 1920-'21, the South stands out prominently. However, this region is still burdened by debt and a good cotton crop sold at good prices this fall would do no more than hasten its economic recovery.

The East has fared relatively better than some regions through the readjustment period. It largely escaped that most far-reaching of economic disturbers: namely, inflation of land values.

The Corn Belt has made strong progress in the last fifteen months. It passed through a painful process of liquidation but gives evidence of staunch position for the near future.

The Wheat Belt is in some sense just facing the real brunt of readjustment times. Wheat, the great international product, has yet to make its world-wide readjustment contingent upon re-entry of Russia into the exporting field. The latter event will be likely to make itself felt in the regions of high production cost. It is a question whether some American land now growing wheat may not find it difficult to meet world competition and pay adequate return for American labor and present land values. It is idle to assume that all the difficulties of the Wheat Belt will be solved through a new system of marketing. The problem is still in no small part a production problem.

The heavy run of hogs to market during June and consequent low prices gives point to the accumulation of meat animals in the country. During the war there was a considerable swing to the great money crops. Later, after the slump in prices, the tendency was again to drift back to somewhat more roughages and feed grain. Also, at the time when

feed was literally cheap enough to burn there was a natural tendency to increase numbers of young animals—the logical way to carry over feed crops being in the form of young, growing animals. At the same time, much old stock was disposed of since it was hardly worth keeping and stockmen were hard pressed to raise money. The general result was rather less stock brought into market last year and more this year.

However, production of cattle and hogs will inevitably react to prices. The present evidence of fewer calves on the ranges suggests that such readjustment in production is often well along before the country at large realizes that it has begun.

One basic obstacle in the whole situation is the disparity that persists between general prices of agricultural and non-agricultural products. The purchasing power of farm products, measured by any reasonable statistical method, is from twenty to twenty-five per cent below pre-war.

A practical corollary to this fact is the run-down condition of the farm productive plant. Somehow in the next ten years a huge amount of new capital will have to be put into physical equipment—buildings, roofs, paint, fences, tile, fertilizer, automobiles, machinery, work horses, gas engines, and a thousand and one things. The farm plant is rapidly falling into the same necessity for repair and replenishment as the railroads have faced and are now remedying. The tremendous agricultural production of the last three years, though aided by favorable weather, represents an achievement in individual efficiency and in individual triumph over handicaps which will be better appreciated, perhaps, at some future time. It has unquestionably been a most fortunate circumstance for the country as a whole.

REPORT OF TEACHING COMMITTEE OF THE AMERICAN FARM ECONOMIC ASSOCIATION

The committee on teaching for 1922 undertook an inquiry as to what the prerequisites should be for graduate work in Agricultural Economics and related subjects. A questionnaire was sent to the leading men in the field of Agricultural Economics and also to students now pursuing graduate work in Agricultural Economics in the leading state institutions offering graduate work in this field.

Expressions were obtained from thirty-eight men in the former group and fifty-six in the latter.

QUESTION 1. SHOULD THE BACHELOR'S DEGREE FROM ANY INSTITUTION OF RECOGNIZED COLLEGIATE STANDING REGARDLESS OF THE FIELD OF STUDY (AGRICULTURE, ENGINEERING, THE ARTS OR SCIENCES) BE ACCEPTED AS SUFFICIENT UNDERGRADUATE BASIS FOR GRADUATE WORK IN AGRICULTURAL ECONOMICS?

Thirty-eight economists answered this question and all answers were in the negative or affirmative with qualifications.

Fifty-six graduate students representing fourteen colleges and universities expressed themselves on this question. Two widely different points of view were indicated as to the amount of study in agricultural subjects which should be required of candidates for registration for graduate work in Agricultural Economics. Nine expressed the extreme view that an Agricultural College degree need not be prerequisite and that they would require no formal courses in agronomy, animal husbandry and other technical agricultural subjects if the student is farm reared and has a practical knowledge of farming. Six graduate students stated that graduation from any standard college should be sufficient to admit graduate standing for a degree in Agricultural Economics. A middle view was expressed by one man, who would "require a certain minimum of agricultural undergraduate work. In certain extraordinary cases, exceptions might be made. Basic knowledge of technical agriculture is of special importance in farm organization work."

QUESTION 2. SHOULD THE USUAL REQUIREMENTS
FOR THE B. S. DEGREE IN AGRICULTURE BE PRE-
REQUISITE TO GRADUATE STUDY FOR A HIGHER
DEGREE IN AGRICULTURAL ECONOMICS?

Eleven economists answered yes. Seven answered in the negative and stated the opinion that the degree in agriculture is of no particular importance as a prerequisite. One, however, added the proviso, "not if the student has had farm experience." These seven failed to indicate any requirements in chemistry, botany, geology and the other sciences. Twenty made various qualifications to their answers. Dr. Hibbard stated, "It would be good policy to admit any qualified student regardless of whether the degree is in agriculture with the stipulation that deficiencies shall be made up, that is admit them to nominal graduate standing. Some of our best men in Agricultural Economics have had no undergraduate work in agriculture." Dr. Warren expressed the opinion that training in agriculture is vitally important as a preparation for graduate work in Agricultural Economics. He suggested that the student having the nonagricultural bachelor's degree might be accepted as a graduate student with the understanding that deficiencies in agricultural subjects should be made up. He would require substantially the same subjects as those necessary for the B. S. degree in agriculture "plus farm practice." He says further, "I would admit students with any degree then choose requirements to include (1) good general education (2) agricultural sciences (3) farm or market experience (4) special courses in Agricultural Economics and Farm Management.

Dr. L. D. H. Weld would require the bachelor's degree in agriculture for graduate students in farm management but not for graduate students in marketing.

George S. Wehrwein, University of Wisconsin, states, "A student ought not to be granted a master's degree for a single year's work unless his preparation in the undergraduate school has been sufficient in economic lines. I would not require a B. S. degree in agriculture especially if the student has had farm experience. A student who is to do graduate work in Agricultural Economics ought to have had a good deal of work in general economics, agricultural economics including

rural sociology and marketing with as many courses in money and banking, transportation, etc., as he could possibly fill in. Our experience at Wisconsin has been that many of our strongest students majoring in agricultural and land economics were graduates of liberal arts colleges with farm experience. On the other hand many of our graduates of agricultural colleges were so highly specialized in animal husbandry, agronomy, horticulture, etc., and with such a meager knowledge of economics that they had hard sledding when it came to graduate work in economics."

Out of the fifty-six graduate students answering Question 2, twenty-four advocated the definite requirement of an Agricultural B. S. degree and twenty-six others, while not requiring the B. S. degree would require that the student should have either practical farming experience or courses in technical agriculture as a prerequisite to undertaking graduate work in Agricultural Economics. The six advocating admittance with any degree made no special requirements either in work or in experience.

QUESTION 3. IF THE B. S. DEGREE IN AGRICULTURE BE NOT REQUIRED HOW MANY SEMESTER HOURS OF UNDERGRADUATE WORK SHOULD BE PREREQUISITE FOR UNDERTAKING GRADUATE WORK IN AGRICULTURAL ECONOMICS?

IN AGRONOMY: Fifteen economists stated a definite number of credits in agronomy should be prerequisite. The number of credits ranged from 3 to 16 with a modal number of 6 and an average of 7 credits. Five said agronomy credits should be required but did not specify the number. (To the 20 named above should be added the 11 who expressed the belief that a degree in agriculture should be prerequisite.)

Of 26 graduate students, 11 advocated definite credits for agronomy, ranging from 5 to 15 with an average of 8.1 credit hours. The remaining 15 said they would not require a definite number of credits in agronomy but that some study of the subject is desirable in most cases.

IN ANIMAL HUSBANDRY: Fifteen economists stated that definite credits should be required in animal husbandry. The number ranged from 2 to 20 credit hours, the modal number

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being 6 and the average 6 2-3. (Add to these the group of 11 named above.)

Nine graduate students indicated definite credit requirements in animal husbandry, the range being from 4 to 12 with an average of 7.7.

IN DAIRY HUSBANDRY: Thirteen economists stated that dairy husbandry credits should be required, the range being from 2 to 9 credit hours, the modal number being 3 and the average 4.3. Two said dairy credits should not be required. Five left the number of credits unspecified. (To these add 11 who would require agricultural degree.)

Nine graduate students would require dairy husbandry, the range in credit hours being from 3 to 10 with an average of 5.7.

IN HORTICULTURE: Twelve indicated a definite number of credits in horticulture to be required. The range being 2 to 5, the modal number 3, the average 3 1-4. Three thought horticulture should not be required, 5 did not specify. (Add to these the 11 who favored required degree in agriculture.)

Six graduate students would require horticulture credit hours ranging from 2 to 6 1-2 with an average of 3 3-4.

IN OTHER AGRICULTURAL SUBJECTS: Of the other subjects mentioned to be included as prerequisites were the following: One economist stated that 10 credit hours in special agricultural subjects should be required, three asked for farm management credits averaging 4 hours, one for 3 credit hours in poultry husbandry, two for 3 credit hours in entomology, one for 6 credit hours in farm engineering, one for 3 credit hours in physiology.

One graduate student would require 3 credits in feeding, three asked for farm management with an average of 6 credit hours, three would require a minimum farm experience of one year.

PREREQUISITES IN PURE SCIENCE

As stated above 7 out of the 38 economists whose answers were obtained, indicated no prerequisites in science; 11 would require the usual sciences in the agricultural college curriculum.

CHEMISTRY: Twelve economists stated a definite number of credit hours in chemistry. the range was 6 to 16 hours, the

modal number 6 hours and the average 7.6. Three did not state a definite number.

Twelve graduate students advocated prerequisite credits in chemistry ranging from 6 to 14 with an average of 7 3-4.

BOTANY: Twelve economists advocated credit requirements in botany ranging from 3 to 6 hours, the modal number being 5 and the average 4.7.

Ten graduate students advocated prerequisites in botany ranging from 3 to 10 with an average of 5.1 credit hours.

GEOLOGY: Ten economists gave a definite statement as to credit hours in geology, the range being from 2 to 6, the modal number 3 and the average 3.5 hours.

Five graduate students advocated geology prerequisites ranging from 2 to 5 with an average of 3 3-5 credit hours.

PHYSICS: Only 5 economists included physics as prerequisite. The credit hours ranging from 4 to 5 with an average of 4.6.

Seven graduate students advocated physics as a prerequisite ranging from 3 to 9 credit hours with an average of 5 credit hours.

ZOOLOGY: Twelve economists would require prerequisite credits in zoology, these ranging from 2 to 6 with a modal number of 5 and an average of 4 1-4 credits.

Seven graduate students would require zoology prerequisites ranging from 3 to 11 with an average of 5 2-7 credit hours.

METEOROLOGY: Four included meteorology as prerequisites, the range being 2 to 4 credit hours, the modal number 2, the average 2 1-2.

One graduate student indicated the requirement of 3 credit hours in meteorology.

MISCELLANEOUS SCIENCES: Entomology was mentioned by one economist for 2 credit hours; plant physiology by one 4 credit hours; veterinary science by one 4 credit hours; mathematics by two who named 10 and 5 credit hours respectively.

Two graduate students would require mathematics of 6 and 3 credit hours respectively.

ENGLISH: Special stress was placed on English by numerous persons. Twenty-four economists advocated a definite number of credits, these ranging from 2 1-2 to 18 with a modal number of 6 and an average of 8.7 credit hours.

Forty-three graduate students indicated definite English

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prerequisites ranging from 2 to 20 credit hours with an average of 8.7.

ENGLISH AND AMERICAN LITERATURE: Nine out of the 38 economists advocated a definite number of prerequisite credit hours in English and American Literature ranging from 1 to 10 with a modal number of 3 and an average of 3.8 credit hours.

Eighteen graduate students indicated requirements in English, ranging from 2 to 8 credit hours with an average of 4.2.

PSYCHOLOGY: Sixteen out of 38 economists included Psychology as a prerequisite subject, the range being from 1 to 6 with a modal number and average of 3 credit hours.

Twenty-seven graduate students indicated definite prerequisite requirements in Psychology ranging from 2 to 7 credit hours with an average of 2.7.

FRENCH: Thirteen out of 38 economists stated definitely that they would require prerequisite credits in French, the modal number being 3 and the average 4 credit hours.

Twenty-three graduate students would require definite French credits, the number ranging from 2 to 12 with an average of 6.2 credit hours.

GERMAN: Twelve economists stated they would require prerequisite credits in German, the modal number being 3 and the average 4.2 credit hours.

Twenty-two graduate students indicated credit requirements in German ranging from 2 to 16 with an average of 6.3 credit hours.

MISCELLANEOUS PREREQUISITES: One economist mentioned each of the following subjects; Economic Geology 3 credit hours, Commercial Law 6 credit hours, Mathematics 3 credit hours, Money and Banking 3 credit hours, Transportation 3 credit hours, Public Speaking or Journalism 3 credit hours. Two mentioned statistics with 3 and 4 credit hours respectively, three mentioned accounting with 3, 2 and 3 credit hours respectively.

Graduate students advocated the following subjects: Logic one person 3 hours, Geography one person 3 hours, Public Speaking six persons, an average of 3 2-3 credit hours, Journalism two persons, an average of 3 credit hours, Accounting

four persons, an average of 6 hours, Statistics two persons with an average of 4 1-2 credit hours, Philosophy one person 3 credit hours, Finance one person 3 credit hours.

QUESTION 4. SHOULD A CERTAIN AMOUNT OF UNDERGRADUATE WORK BE REQUIRED IN ECONOMICS AND OTHER SOCIAL SCIENCES?

On the question of prerequisites in economics and the other social sciences there was a coming together in the opinions of the groups which had differed on the question of agriculture and the natural science subjects as prerequisites for graduate work and Agricultural Economics.

GENERAL ECONOMICS: Out of the 38 economists 36 advocated a definite number of prerequisite credit hours in General Economics. Two did not indicate the definite number. The range in credit hours was from 2 1-2 to 16 with a modal number of 6 and an average of 5.7.

Forty-nine graduate students indicated a definite number of prerequisite credits in General Economics ranging from 3 to 20 with an average of 6 1-2 credit hours.

AGRICULTURAL ECONOMICS: Thirty-two economists indicated a definite number of credit hours which they would require in Agricultural Economics, the number ranging from 2 to 18 with a modal number of 6 and an average of 5.5 credit hours.

Thirty-eight graduate students advocated a definite number of credits in Agricultural Economics, the range being from 2 to 10 with an average of 5.

POLITICAL SCIENCE: Fifteen indicated a definite number of prerequisite credit hours in political science. These ranged from 1 to 14 with a modal number of 3 and an average of 4.5.

Twenty-eight graduate students advocated definite credit requirements in Political Science ranging from 2 to 10 with an average of 4.

HISTORY: Twenty-one persons indicated prerequisite credits in history, these ranging from 1 to 10 with a modal number of 6 and an average of 4 2-3 credit hours. Dr. Hibbard answered, "The more the better."

Twenty-nine graduate students advocated specific History requirements ranging from 2 to 12 with an average of 5.3 credit hours.

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SOCIOLOGY: Eighteen answered that prerequisite credits in sociology should be required. The range being from 1 to 8 with a modal number of 3 and an average of 3.2 credit hours.

Twenty-one graduate students advocated prerequisites in Sociology ranging from 2 to 10 with an average of 3.7 credit hours.

QUESTION 5. SHOULD SOME UNDERGRADUATE WORK IN AGRICULTURAL SUBJECTS BE REQUIRED AND AT THE SAME TIME NO FIXED REQUIREMENTS BE MADE LEAVING IT TO THOSE IN CHARGE TO DECIDE EACH CASE ON ITS MERITS?

Thirty-two economists answered this question in the affirmative.

Forty-one graduate students answered the question in the affirmative. Eleven in the negative.

QUESTION 6. WHAT MODIFICATIONS SHOULD BE MADE IF IT WERE ASSUMED THAT THE STUDENT HAS MADE UP HIS MIND TO GO INTO A PARTICULAR BRANCH OF AGRICULTURAL ECONOMICS?

There was an equal division of opinions on this question. Dr. Hibbard stated that he would stress both general and special accounting when the graduate work was to be in Farm Management and Cost of Production. Dr. Warren stressed the importance of technical agricultural subjects and farm practice for farm management graduate work. Dr. Weld would stress technical agricultural subjects, Economics and Accounting for farm management graduate work. For graduate work in marketing he would stress Money and Banking, Commercial Geography, Economics, Accounting, and Corporation Finance. Dr. Nourse stressed technical agricultural subjects for farm management graduate work.

Respectfully submitted,

W. D. NICHOLLS,
Chairman.

GRADUATE STUDENTS IN AGRICULTURAL ECONOMICS

(Supplementing List Published in Journal, July, 1922.)

- BERG, WALLACE, B. S. North Dakota Agricultural College, 1920. M. S. Nebraska, 1923. Agricultural Economics. Thesis title, Land Tenancy and Ownership in North Dakota.
- CARRIGAN, J. E., B. S. in Agr., University of Vermont, 1914. Minor, Economics; Major, Agricultural Economics. Thesis title not announced.
- CHURCHILL, O. O., B. S. Michigan Agricultural College, 1903. M. S. North Dakota Agricultural College, 1923. Minor, Genetics; Major, Agricultural Economics. Thesis title, Marketing Flax.
- COKE, J., B. S. in Agriculture, University of Toronto, 1916. M. S. Wisconsin, 1922. Major, Agricultural Economics.
- FOLSOM, JOSIAH C., B. S. Massachusetts Agricultural College, 1910. M. S. Massachusetts Agricultural College, 1921. Major, Agricultural Economics; Minor, Horticultural Manufactures. Thesis title, The Agricultural Position of New England.
- FULLER, O. M., B. S. North Dakota Agricultural College, 1923. M. S. North Dakota Agricultural College, 1924. Minor, Economic Science; Major, Agricultural Economics. Thesis title, A Special Study of the Baldwin Farms, Ellendale, N. D.
- GREEN, KENNETH W., B. S. in Agriculture, North Dakota Agricultural College, 1923. M. S. North Dakota Agricultural College, 1924. Minor, Dairy Production; Major, Agricultural Economics. Thesis title, Crop Insurance as Related to Farm Management in the Northwest.
- HITCHCOCK, JOHN A., B. S. in Agriculture, University of Vermont, 1917. Minor, Economics; Major, Agricultural Economics and Farm Management. Thesis title not announced.
- MENDUM, SAMUEL W., Massachusetts Agricultural College and Boston University, 1910. M. S. University of Wisconsin, 1913. Major, Farm Management; Minors, Animal Husbandry and Soils. Thesis title, The Utilization of Man Labor on 38 Wisconsin Farms.
- WINSLOW, C. E., B. S. in Agriculture, University of Vermont, 1921. Minor, Economics; Major, Agricultural Economics. Thesis title not announced.

NEWS NOTES

A. F. MacDougall, extension professor of Farm Management, Massachusetts Agriculture College, has tendered his resignation as Farm Management Demonstrator, effective August 1, 1923, to assume the duties of manager of the Middlesex County Extension Service with headquarters at Waltham. Mr. MacDougall takes the position vacated by F. W. Griggs, who has resigned to enter business with his father.

The Farm Management Department cooperating with the Extension Service of the Massachusetts Agriculture College has just completed a resurvey on some 200 farms located in Middlesex, Franklin, Hampden, and Berkshire Counties. This is the third year in Middlesex and Berkshire Counties and the second year in Franklin and Hampden Counties. The results have been used thus far in extension work chiefly.

Mr. Clarence I. Hendrickson has been appointed to a position in the Department of Economics in the Connecticut Agricultural College, Storrs, Connecticut. He has been studying the past three years at the University of Wisconsin, majoring in Agricultural Economics and will be teaching such courses as Agricultural Geography, and also engaged in research work under the direction of Professor I. G. Davis.

Due to the low market price of milk, the average wholesale dairy farmer in New Hampshire has lost money during the last two years. However, several men have made good incomes in spite of the low prices. One of these dairymen with the assistance of a hired man milked thirty-three cows and produced over two hundred and forty thousand pounds of milk in a year. This is about one hundred and twenty thousand pounds of milk per man. As many small dairymen in this State produce only twenty to thirty thousand pounds in a year, anything over one hundred thousand pounds seems high.

From a preliminary study of groups of wholesale milk

farms, it seems that the wholesale dairyman must produce at least sixty thousand pounds of 3.7 milk per man before there can be any large return for labor.

Mr. F. L. Manning, B.Sc., Cornell, has been appointed to a fellowship at the New Jersey State Agricultural College, taking up part time teaching and part time research work in marketing.

Professor P. K. Whelpton of the Department of Farm Management of Texas A. & M. College is spending the summer at Cornell University doing graduate work.

Mr. C. D. Byrne of Madison, Wisconsin, has accepted the position of Extension Assistant in charge of Extension Publicity with the Pennsylvania State College. He assumed his new duties on July 1. Mr. Byrne received his Master's Degree in Journalism at the University of Wisconsin this spring. He was formerly employed as Secretary of the National Brown Swiss Breeders Association and had charge of all the publicity of the association.

The five men from the Department of Agricultural Extension of the Pennsylvania State College who have been taking graduate work in Agricultural Economics at the University of Wisconsin, received their Master's Degrees this spring. They have all returned to their former positions. H. N. Reist, County Agent in Warren County; H. G. Niesley, County Agent in Dauphin County; D. R. Pheasant, County Agent in Juniata County; W. B. Connell, Assistant Professor of Animal Husbandry Extension; E. L. Moffitt, Professor of Farm Management Extension.

Mr. F. P. Weaver, Assistant Director of Agricultural Extension, is doing graduate work in Agricultural Economics at Cornell University this year. Mr. Weaver went to Cornell the first of February and will complete his work about the first of September.

A farm survey has just been begun in South Carolina, the Clemson Agricultural College and United States Department of Agriculture cooperating in the work. Mr. W. C. Jensen is carrying on this work and has the following assist-

ing him: Mr. B. A. Russell, Mr. R. L. Coleman, and Mr. Finn, of Washington. It is hoped to cover in this survey 250 farms in Anderson County and perhaps as many more in some other county. Some of this work is repeated work on farms already surveyed by the United States Department of Agriculture. It is hoped to get a comparison between an area not affected very much by the boll weevil and another area which has already been affected seriously by the weevil. An attempt is being made to determine the cost of production of cotton and some other crops besides making the complete farm business analysis.

Condition reports on all of the important crops grown in Georgia will be issued on a county basis, beginning July 1, instead of by districts, as has been done in the past. The new method of reporting was made possible through the cooperation of the U. S. Bureau of Agricultural Economics, the Georgia State College of Agriculture, and the State Department of Agriculture. Since Georgia has 160 counties, the labor of tabulating and summarizing the reports will be greatly increased, but it is expected that the greater accuracy and wider usefulness of the information will more than justify the added expense. Z. R. Pettet, of the U. S. Bureau of Agricultural Economics, will continue in charge of the work.

The cost of producing hay in Georgia is being studied by the Farm Management section of the Georgia State College of Agriculture. Survey records are being obtained in about 15 representative counties. All of the principal hay crops will be covered by the survey.

Mr. H. G. Hamilton, M. S., of the University of Florida has been employed for field work in farm management by the University of Florida. This is a new position created this year.

The third annual Summer School for Rural Pastors was held at Ohio State University from June 18 to July 5. There were fifty in attendance. The program consisted of courses in the economics and sociology of country life, psychology and religion. The school was conducted jointly by the Ohio

Council of Churches and the Ohio College of Agriculture. Mr. O. E. Lively, assistant professor of rural sociology, directed the school. The faculty consisted of members of the College of Agriculture and Warren H. Wilson of Columbia University; Edward C. Lindeman, formerly secretary of America Country Life Association; Prof. Mark A. May of Syracuse University, and others.

C. G. McBride, assistant professor of agricultural economics and marketing, Ohio State University, is attending Chicago University during the summer quarter.

B. A. Wallace, extension agent in marketing at Ohio State University, in cooperation with the farm crops department of the University, held a six-day school for elevator managers during May. Thirty were in attendance. Laboratory exercises in elevator accounting and grain grading, and discussions on marketing, business methods, speculation and other topics of interest were conducted.

Mr. Walter Ernest Paulson for the past three years a graduate student in the Department of Agricultural Economics, University of Wisconsin, has accepted a position as Assistant Professor in the Department of Farm Management and Rural Economics of Purdue University. He enters upon his new duties September 1. The main lines of work which he will take up have to do with teaching in marketing and immediate allied subjects, such as, for example, Farmers' Movements.

Mr. F. F. Elliott, formerly farm management demonstrator and who has been taking graduate work in agricultural economics at Harvard during the past year, is helping with the farm management extension work in Illinois during the summer. Mr. Elliott expects to take up further graduate study in the University of Wisconsin in September.

During the second semester of this year the students in agricultural and land economics, University of Wisconsin, formed a Farm Economics Club. Meetings were held about every two weeks at cafeteria suppers at which members of the faculty and of the state department of agriculture and the department of markets were the principal speakers. At the

final meeting in the spring, a banquet in honor of Professor B. H. Hibbard and the agricultural department, the club voted to adopt the name, "The Taylor-Hibbard Club" and arrangements were made for continued meetings next year.

The following students were granted master's degrees at the June commencement at the University of Wisconsin in agricultural and land economics: Toshisuke Shimizu, Clara F. Wigder, Arthur L. Walker, Earle L. Moffit and Howard G. Niesley.

Following is the list of students granted the Ph. D. with the subject of the thesis: Eustaquino D. Aquino, "The Agricultural Legislation of the Philippine Islands;" Paul A. Eke, "The History of Agriculture in Rusk County, Wisconsin;" Garnet W. Forster, "Land Prices and Land Speculation in the Bluegrass Region of Kentucky;" Albert W. Jamison, "The Agriculture of Illinois;" Virgil P. Lee, "The Need and Present Facilities for Middle Term Agricultural Credit;" Fred R. Yoder, "The Social Aspects of Farm Tenancy in the United States."

Frederick A. Buechel, now with the Agricultural and Mechanical College of Texas received his doctor's degree during the past year. His thesis subject was, "The Relation of Rent to Agricultural Land Value in Theory and Practice."

Mr. Henry H. Bakken has been employed by the Wisconsin Experiment Station to engage in research in Potato Marketing. He has been for the most of two years a graduate student at the University of Wisconsin and the research which he has undertaken is designed to secure necessary information to aid in the making of instructive plans for the marketing of Wisconsin potatoes.

Mr. V. R. Wertz, formerly on the staff of the University of Minnesota and more recently a graduate student at the University of Wisconsin will join the staff in Farm Economics at South Dakota College of Agriculture in September. Mr. Wertz will do instructional work in General Economics, Statistics and Related Subjects. R. F. Wagner, who has been with this Department during the past year, is leaving in September to take further advanced work.

Work was started on June 25 in connection with farm management survey in the Great Plains Area. Between 75

and 100 ranches in the northwest part of South Dakota will be covered in the survey. C. G. Worsham, representing South Dakota, and E. R. Johnson, of the Washington office, are the field men handling the survey.

Beginning with the coming year the General Economics work at this institution is transferred to the Department of Farm Economics. This will make possible expansion of all of the economics work and better correlation.

Two preliminary summaries, one the second year summary of the Jones County, South Dakota, survey and the other the preliminary summary of the first two years' survey in the wheat section of South Dakota, are in the process of preparation and will be available August 1.

The Department of Rural Life at the University of Missouri has employed as Assistant Professor of Marketing, Mr. Donald Ross Cowan, of the University of Minnesota. Mr. Cowan has just completed his work for the Doctor's degree in the Minnesota Graduate School. He has also been teaching at the institution for the past two years. Mr. Cowan will have charge of all teaching and research work in the field of Marketing at the Missouri College of Agriculture.

Mr. John Sheay, Extension Specialist in Marketing at Missouri, has resigned and has taken up his duties as County Agent in Minnesota.

Mr. Harry C. Hensley, for several years a County Agent in Missouri and recently District Supervisor of County Agents is being transferred to the position of Extension Specialist in Marketing in the Rural Life Department and he will take up his work on July 1.

A course in Ranch Economics was offered the second semester the past session by Dr. B. Youngblood, director of the Experiment Station of Texas. The elaborate bulletin on Ranch Economics prepared by Youngblood and Cox was used as a text. This is the first time such a course has been offered in this College or anywhere else within the knowledge of the writer. Most of the men were from the ranch country and were very enthusiastic in their praise of the course.

V. P. Lee, who recently took his Ph. D. degree in the Department of Agricultural Economics at the University of

Wisconsin, has been added to the teaching staff of the Department of Agricultural Economics at A. and M. College with the rank of professor, to take effect September 1. In addition to Mr. Lee, two more new men, not yet selected, will be added to the staff during the coming year.

L. P. Gabbard, of the division of Farm and Ranch Economics, of the Experiment Station, is spending the summer at the University of Wisconsin. He expects to come up for his preliminary examination for the Doctor's degree before his return in August.

The Four-year Course in Agricultural Administration has outstripped all other courses in the College in its appeal to the student body. From an enrollment of about twenty, two years ago when the Course was first introduced, the number has risen to over three hundred. The registrar estimates that not fewer than one hundred and sixty freshmen will enroll in the course next fall.

Because of the readjustments necessitated by the limited budget under which it must operate during the present biennium and a material increase in the student enrollment, the University of Idaho terminated its cooperative relations with the United States Department of Agriculture in farm organization studies on July 1.

Miss Edna Biglow, who for the past three years has served as statistical clerk in the farm organization studies conducted cooperatively by the University of Idaho and the Bureau of Agricultural Economics of the United States Department of Agriculture, has accepted a position as assistant in the department of Economics and Sociology of the Colorado Agricultural College. Miss Biglow assumed her new duties July 1, 1923.

Completion of a year and a half's study of milk production costs on 246 California dairies located in eleven commercial dairying sections from the Oregon boundary to the Mexican border and involving 14,250 cows has been completed and submitted as a 268-page report by R. L. Adams, of the Division of Farm Management, University of California, for consideration as material for an experiment station

bulletin or bulletins. Year records were taken on each dairy and from the data have been determined (a) actual costs as of 1922, (b) unit factors, and (c) suggested ways for increasing profits. It was found that from 30 to 92 per cent of the output from the dairies studied in each district was produced at a cost greater than the average yearly price received.

A lengthy bulletin on "California Farm Tenancy" has been likewise submitted to the Director of the California Experiment Station by Professor Adams, following the concluding of a five-year study of leasing methods, effects of tenancy, and types of contracts in use.

